wall temperature is approximately 850 °C.

§ 164.009–15 Test procedure.

(a) *General.* Paragraphs (b) through (k) of this section contain the test procedures for each material submitted for approval, except fiberglass and other materials that melt at 750° ±10 °C. Paragraph (l) of this section contains test procedures for fiberglass and other materials that melt at 750° ±10 °C.

(b) *Preparation of specimens.* (1) The designated laboratory prepares 5 cylindrical specimens representative of the properties of the sample submitted for testing. The dimensions of each specimen are as follows:

diameter: 45(+2/−0) mm
height: 50 ±3 mm
volume: 80 ±5 cm^3

(2) If the height of the sample, except a composite material, is less than 47 mm, the specimens prepared consist of layers of the sample.

(3) If the sample is a composite material and has a height that is not 50 ±3mm, the layers of the specimen prepared are proportional in thickness to the layers of the sample.

(4) The top and bottom faces of each specimen prepared are the faces of the material as manufactured.

(5) If it is not practicable to prepare a specimen by the procedures described in paragraphs (b)(2) through (b)(4) of this section, the test is performed on five specimens of each component of the sample made to the dimensions prescribed in paragraph (b)(1) of this section.

(c) *Conditioning of specimen.* Each specimen is conditioned for at least 20 hours in a ventilated oven maintained at 60 ±5 °C. and is then cooled to room temperature in a desiccator.

(d) *Weight of specimen.* The weight of each conditioned specimen after cooling is determined before it is tested.

(e) *Placement of specimen in holder.* After a specimen is conditioned and weighed, it is placed in the specimen holder. A specimen that is made of layers of a composite material is held firmly together in the specimen holder.

(f) *Attachment of thermocouples.* After the specimen is placed in the specimen holder, the thermocouples are attached to the specimen as follows: A vertical hole with a diameter of 2 mm and a depth that is half the height of the specimen is made in the center of the top of the specimen. The specimen thermocouple is then inserted into the hole so that its hot junction is at the center of the specimen. The surface thermocouple is put in contact with the surface of the specimen at its midheight.

(g) *Preparation of the apparatus.* The apparatus is examined to determine whether it is in good working order and to ensure that the equipment is protected against drafts and is not exposed to direct sunlight or artificial illumination. The furnace temperature is stabilized at 750 °C. ±10 °C. and kept at that temperature for the duration of the test. The furnace temperature is stabilized when no adjustments are needed in the energy input to the furnace to keep the temperature constant.

(h) *Insertion of specimen.* After the furnace temperature is stabilized for at least 10 minutes, the specimen is inserted into the furnace. The insertion is completed within 5 seconds. The specimen is positioned so that the hot junction of the surface thermocouple is diametrically opposite the hot junction of the furnace thermocouple.

(i) *Heating period.* The heating period begins upon insertion of the specimen into the furnace and continues for 20 minutes, or until peak temperatures have passed.

(j) *Test observations.* Temperature measurements at each thermocouple are made at intervals of not more than 10 seconds during the heating period, and note is taken of the occurrence and duration of any flaming. At the end of the heating period, the specimen is removed from the furnace and weighed while still hot.

(k) *Test results.* Material is approved under this subpart if the test results of the sample submitted are within the following limits:

(1) The highest temperature recorded for each specimen during the test by the furnace thermocouple, when averaged with the highest temperatures recorded for the other specimens, is not more than 50 °C. above the stabilized furnace temperature.

(2) The highest temperature recorded for each specimen during the test by the surface thermocouple, when averaged with the highest temperatures recorded for the other specimens, is not more than 50 °C. above the stabilized furnace temperature.

(3) The duration of flaming of each specimen during the test, when averaged with duration of flaming recorded for the other specimens, is not more than 10 seconds.

(4) The average weight loss of the specimens after heating is not more than 50 percent of their average weight after conditioning.

(l) *Fiberglass and other materials that melt at 750 °C. ±10 °C.* If the material submitted for approval is fiberglass or other material that melts at 750° ±10 °C., it is tested as described in paragraphs (b) through (k) of this section, except the average weight loss of the sample is determined as follows:

(1) Five cylindrical specimens in addition to the five cylindrical specimens required in paragraph (b) of this section are prepared as described in paragraph (b) of this section.

(2) Each of the additional specimens is placed on a weighing dish and both the specimen and the weighing dish are conditioned as described in paragraph (c) of this section.

(3) The weight of each specimen and its weighing dish is determined as described in paragraph (d) of this section.

(4) After a specimen and weighing dish are conditioned and weighed, they are placed in the specimen holder with the specimen supported by weighing dish. No specimen thermocouple or surface thermocouple is attached to the specimen.

(5) The apparatus is prepared as described in paragraph (g) of this section, and after the furnace temperature has stabilized for at least 10 minutes, the specimen and weighing dish are inserted into the furnace. The specimen and weighing dish are then heated for 20 minutes or until peak temperatures have passed. At the end of the heating period, the specimen and weighing dish are removed from the furnace and weighed while still hot.

(6) The average weight loss of the specimens after heating may not be more than 50 percent of their average weight before heating.

§ 164.009–17 Density measurement.

(a) The measurements described in this section are made to determine the density of a sample.

(b) If the sample is a solid material, a specimen that has a length of 305 mm, a width of 305 mm, and thickness equal to that of the sample is prepared. The length and width are measured to the nearest 0.80 mm and the thickness to the nearest 0.25 mm. Allowance is made for any irregularity in the surfaces of the specimen. The average of at least four measurements of each dimension is determined.

(c) If the sample is fibrous insulation, a specimen is prepared from sheets of the sample submitted. The sample is a cube and each dimension is 305 mm ±1.60 mm. The average of at least four measurements of each dimension is determined.

(d) The weight of a specimen is determined with a sensitive balance scale accurate to at least 0.5 percent of the weight of the specimen.

(e) The dimension and weight measurements of a specimen are made after it has been conditioned for at least one week, and for any additional time needed for the specimen to reach a constant weight, in an atmosphere that is 22.8 °C. ±2 °C. and 50 percent ±5 percent relative humidity.

§ 164.009–19 Measurement of moisture and volatile matter content.

(a) The measurements described in this section are made to determine the moisture and volatile matter content of a sample.

(b) A specimen cut from the density specimen of a sample is conditioned for at least one week, and for any additional time needed for the specimen to reach a constant weight, in an atmosphere that is 22.8 °C. ±2 °C., and 50 percent ±5 percent relative humidity. The conditioned specimen is then weighed and transferred to a previously weighed wide mouth weighing bottle that has a glass stopper. With the stopper removed, the bottle, stopper, and specimen are heated at 105 °C. ±5 °C. for four hours. After four hours, the stopper is